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Assignment 1 Problem 1:

Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

a) Navigate and List: a. Start by navigating to your home directory and list its contents. Then, move into a directory named "LinuxAssignment" if it exists; otherwise, create it.

```
afsha@LAPTOP-DBBDT8KE:~$ ls
LinuxAssignment  cdac  s10.sh  s11.sh  s12.sh  s13.sh  s14.sh  s15.sh  s16.sh  s3.sh  s7.sh  s8.sh  s9.sh
afsha@LAPTOP-DBBDT8KE:~$ cd LinuxAssignment
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```

b) File Management: a. Inside the "LinuxAssignment" directory, create a new file named "file1.txt". Display its contents.

```
afsha@LAPTOP-DBBDT8KE:~$ ls
LinuxAssignment  cdac  s10.sh  s11.sh  s12.sh  s13.sh  s14.sh  s15.sh  s16.sh  s3.sh  s7.sh  s8.sh  s9.sh
afsha@LAPTOP-DBBDT8KE:~$ cd LinuxAssignment
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls
docs  file1.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cat file1.txt
Hello Afsha welcome to cdac

afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```

c) Directory Management:

a. Create a new directory named "docs" inside the "LinuxAssignment" directory.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ mkdir docs
mkdir: cannot create directory 'docs': File exists
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ mkdir docs1
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```

d) Copy and Move Files:

a. Copy the "file1.txt" file into the "docs" directory and rename it to "file2.txt".

```
cat: docs/file1.txt: No such file or directory
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls
docs  docs1  file1.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cp file1.txt docs/file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cd docs
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls
file2.text  file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls
file2.text  file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cat file2.txt
Hello Afsha welcome to cdac

afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
```

e) Permissions and Ownership:

a. Change the permissions of "file2.txt" to allow read, write, and execute permissions for

the owner and only read permissions for others. Then, change the owner of "file2.txt" to

the current user.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cat file2.txt
Hello Afsha welcome to cdac

afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ chmod 744 file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls
file2.text  file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls -l file2.txt
-rwxr--r-- 1 afsha afsha 33 Aug 21 02:05 file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
```

f) Final Checklist:

a. Finally, list the contents of the "LinuxAssignment" directory and the root directory to

ensure that all operations were performed correctly.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls -l
total 8
-rw-r--r-- 1 afsha afsha 33 Aug 18 14:52 file2.text
-rwxr--r-- 1 afsha afsha 33 Aug 21 02:05 file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cd ..
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls -l
total 12
drwxr-xr-x 2 afsha afsha 4096 Aug 21 02:05 docs
drwxr-xr-x 2 afsha afsha 4096 Aug 21 02:00 docs1
-rw-r--r-- 1 afsha afsha   33 Aug 18 14:31 file1.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```

3 2 cm of rain   Search

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cd docs1
-bash: cd: docs1: No such file or directory
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cd ..
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cd docs1
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs1$ ls
file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs1$ cat file2.txt
Hello Afsha welcome to cdac

afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs1$
```

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cd ..
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls -l
total 12
drwxr-xr-x 2 afsha afsha 4096 Aug 21 02:05 docs
drwxr-xr-x 2 afsha afsha 4096 Aug 21 02:00 docs1
-rw-r--r-- 1 afsha afsha   33 Aug 18 14:31 file1.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls -l /
total 2740
lrwxrwxrwx   1 root root       7 Apr 22  2024 bin -> usr/bin
drwxr-xr-x   2 root root    4096 Feb 26  2024 bin.usr-is-merged
drwxr-xr-x   2 root root    4096 Apr 22  2024 boot
drwxr-xr-x  15 root root    3860 Aug 18 13:43 dev
drwxr-xr-x  87 root root    4096 Aug 20 10:16 etc
drwxr-xr-x   3 root root    4096 Aug 18 13:42 home
-rwxrwxrwx   1 root root 2724480 Jul 31 14:56 init
lrwxrwxrwx   1 root root       7 Apr 22  2024 lib -> usr/lib
drwxr-xr-x   2 root root    4096 Apr  8  2024 lib.usr-is-merged
lrwxrwxrwx   1 root root       9 Apr 22  2024 lib64 -> usr/lib64
drwx------   2 root root   16384 Aug 18 13:41 lost+found
drwxr-xr-x   2 root root    4096 Jan  6  2025 media
drwxr-xr-x   6 root root    4096 Aug 18 13:42 mnt
drwxr-xr-x   2 root root    4096 Jan  6  2025 opt
dr-xr-xr-x 245 root root       0 Aug 18 13:43 proc
drwx------   4 root root    4096 Aug 18 13:42 root
drwxr-xr-x  20 root root     600 Aug 20 09:33 run
lrwxrwxrwx   1 root root       8 Apr 22  2024 sbin -> usr/sbin
drwxr-xr-x   2 root root    4096 Mar 31  2024 sbin.usr-is-merged
drwxr-xr-x   2 root root    4096 Aug 18 13:42 snap
drwxr-xr-x   2 root root    4096 Jan  6  2025 srv
dr-xr-xr-x  13 root root       0 Aug 18 13:41 sys
drwxrwxrwt   9 root root    4096 Aug 21 01:36 tmp
drwxr-xr-x  12 root root    4096 Jan  6  2025 usr
drwxr-xr-x  13 root root    4096 Aug 18 13:42 var
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls
docs  docs1  file1.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cd docs
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls
```

g) File Searching: a. Search for all files with the extension ".txt" in the current directory and its subdirectories.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs1$ ls
file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs1$ cd ..
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls
docs  docs1  file1.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cat >> file2.txt
Hi this is Afsha , welcome to linux programing
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cat file2.txt
Hi this is Afsha , welcome to linux programing
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls *.txt
file1.txt  file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cd docs
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls *.txt
file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
```

25°C   Search

b. Display lines containing a specific word in a file (provide a file name and the specific word to search).

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cd ..
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ grep "afsha" file1.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cat file1.txt
Hello Afsha welcome to cdac

afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ grep "Afsha" file1.txt
Hello Afsha welcome to cdac
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ grep -i "afsha" file1.txt
Hello Afsha welcome to cdac
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```
```
3  25°C
```

h) System Information: a. Display the current system date and time.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ date
Thu Aug 21 02:30:53 UTC 2025
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cd docs
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ date
Thu Aug 21 02:31:00 UTC 2025
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ time
```

g)Networking:

a. Display the IP address of the system.

b. Ping a remote server to check connectivity (provide a remote server address to ping).

```
                     valid_lft forever preferred_lft forever
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ hostname -I
172.21.218.205
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ip a | grep inet
    inet 127.0.0.1/8 scope host lo
    inet 10.255.255.254/32 brd 10.255.255.254 scope global lo
    inet6 ::1/128 scope host
    inet 172.21.218.205/20 brd 172.21.223.255 scope global eth0
    inet6 fe80::215:5dff:fe17:e40d/64 scope link
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ping -c 4 google.com
PING google.com (142.250.192.78) 56(84) bytes of data.
64 bytes from bom12s16-in-f14.1e100.net (142.250.192.78): icmp_seq=1 ttl=118 time=29.6 ms
64 bytes from bom12s16-in-f14.1e100.net (142.250.192.78): icmp_seq=2 ttl=118 time=30.7 ms
64 bytes from bom12s16-in-f14.1e100.net (142.250.192.78): icmp_seq=3 ttl=118 time=29.4 ms
64 bytes from bom12s16-in-f14.1e100.net (142.250.192.78): icmp_seq=4 ttl=118 time=31.4 ms

--- google.com ping statistics ---
4 packets transmitted, 4 received, 0% packet loss, time 3000ms
rtt min/avg/max/mdev = 29.374/30.253/31.422/0.834 ms
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
```
```
3  25°C                          Search
```

j) File Compression: a. Compress the "docs" directory into a zip file.

```
Processing triggers for man-db (2.12.0-4build2) ...
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ zip -r docs.zip docs
  adding: docs/ (stored 0%)
  adding: docs/file2.text (stored 0%)
  adding: docs/file2.txt (stored 0%)
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```
```
3  25°C                                    Search
```

b. Extract the contents of the zip file into a new directory.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ unzip docs.zip -d docs_extracted
Archive:  docs.zip
   creating: docs_extracted/docs/
 extracting: docs_extracted/docs/file2.text
 extracting: docs_extracted/docs/file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ ls
docs   docs.zip   docs1   docs_extracted   file1.txt   file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```
```
3  25°C                                    Search
```

k) File Editing: a. Open the "file1.txt" file in a text editor and add some text to it.

```
afsha@LAPTOP-DBBDT8K   ×   +   ∨

#!/bin/bash
Hello this is afsha khan, this is my Linux file.
I am learning Linux commands.

:%s/Linux/Ubuntu/g
~
~
~
~
~
~
~
```

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ vi file3.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cat file3.txt
#!/bin/bash
Hello this is afsha khan, this is my Linux file.
I am learning Linux commands.

:%s/Linux/Ubuntu/g
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```

b. Replace a specific word in the "file1.txt" file with another word (provide the original word and the word to replace it with).

```
#!/bin/bash
Hello this is afsha khan, this is my Ubuntu file.
I am learning Ubuntu commands.
~
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~
:%s/Linux/Ubuntu/g
```

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ vi file3.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$ cat file3.txt
#!/bin/bash
Hello this is afsha khan, this is my Ubuntu file.
I am learning Ubuntu commands.
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment$
```

Problem 2: Read the instructions carefully and answer accordingly. If there is any need to insert some data then do that as well.

a. Suppose you have a file named "data.txt" containing important information. Display the first 10 lines of this file to quickly glance at its contents using a command.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls
file2.text  file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cat >> data.txt
CDAC Kharghar in Mumbai is known for its Diploma in Advanced Computing (DAC) course
 which is quite popular among students aspiring to enter the IT and software development fields.
The faculty at CDAC Kharghar typically consists of experienced professionals from the IT industry as well as academic experts.
Many have significant experience in teaching and research.
The institute often invites industry experts for guest lectures.
providing students with insights into current industry trends and practices.
Faculty members focus on practical training alongside theoretical knowledge.
CDAC Kharghar has a good reputation for placements with many students securing jobs in reputed IT companies shortly after completing their course.
The institute conducts regular placement drives, inviting various companies to recruit students.
Many well-known firms in the tech industry participate in these drives.
The strong alumni network also plays a role in securing placements, as many alumni are in influential positions in various companies
helping to facilitate job opportunities for new graduates.afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ ls
data.txt  file2.text  file2.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ head -10 data.txt
CDAC Kharghar in Mumbai is known for its Diploma in Advanced Computing (DAC) course
 which is quite popular among students aspiring to enter the IT and software development fields.
The faculty at CDAC Kharghar typically consists of experienced professionals from the IT industry as well as academic experts.
Many have significant experience in teaching and research.
The institute often invites industry experts for guest lectures.
providing students with insights into current industry trends and practices.
Faculty members focus on practical training alongside theoretical knowledge.
CDAC Kharghar has a good reputation for placements with many students securing jobs in reputed IT companies shortly after completing their course.
The institute conducts regular placement drives, inviting various companies to recruit students.
Many well-known firms in the tech industry participate in these drives.
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
```

b. Now, to check the end of the file for any recent additions, display the last 5 lines of "data.txt" using another command.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ tail -5 data.txt
CDAC Kharghar has a good reputation for placements with many students securing jobs in reputed IT companies shortly after completing their course.
The institute conducts regular placement drives, inviting various companies to recruit students.
Many well-known firms in the tech industry participate in these drives.
The strong alumni network also plays a role in securing placements, as many alumni are in influential positions in various companies
helping to facilitate job opportunities for new graduates.afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
25°C                                                                                          ENG          09:02
```

c. In a file named "numbers.txt," there are a series of numbers. Display the first 15 lines of this file to analyze the initial data set.

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ head -n 15 numbers.txt
1
2
2
3
3
4
4
5

6
6
7

78

afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
```

d. To focus on the last few numbers of the dataset, display the last 3 lines of "numbers.txt".

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ tail -3 numbers.txt
3445
23443
435
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
25°C
```

e. Imagine you have a file named "input.txt" with text content. Use a command to translate all lowercase letters to uppercase in "input.txt" and save the modified text in a new file named "output.txt."

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cat input.txt
Hi Everyone !!
This is afsha
Sofiya
Asfiya
salik
mujahid
asif
shraddha
nausheen
kalyaniafsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ tr 'a-z' 'A-Z' < input.txt > output.txt
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cat output.txt
HI EVERYONE !!
THIS IS AFSHA
SOFIYA
ASFIYA
SALIK
MUJAHID
ASIF
SHRADDHA
NAUSHEEN
KALYANIafsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
Rainy days ahead
```

f. In a file named "duplicate.txt," there are several lines of text, some of which are duplicates. Use a command to display only the unique lines from "duplicate.txt."

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ sort duplicate.txt | uniq -u
Green
black
blue
green
magenta
orage
pink
teal
white
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
```

 g. In a file named "fruit.txt," there is a list of fruits, but some fruits are repeated. Use a command to display each unique fruit along with the count of its occurrences in "fruit.txt."

```
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ cat >> fruit.txt
apple
banana
apple
orange
banana
appleafsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$ sort fruit.txt | uniq -c | sort -nr
      3 apple
      2 banana
      1 orange
afsha@LAPTOP-DBBDT8KE:~/LinuxAssignment/docs$
```